

CLAIMS:

1. An isolated nucleic acid molecule or derivative, homologue or analogue thereof comprising a nucleotide sequence encoding or complementary to a sequence encoding a protein or derivative, homologue or mimetic of said protein wherein said nucleic acid molecule is differentially expressed in liver tissue of obese animals compared to lean animals.
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2. The isolated nucleic acid molecule according to claim 1 wherein said protein comprises the amino acid sequence substantially as set forth in SEQ ID NO:2 or a derivative, homologue or mimetic thereof or having at least about 45% similarity to at least 10 contiguous amino acids in SEQ ID NO:2.
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3. The isolated nucleic acid molecule according to claim 2 comprising a nucleotide sequence substantially as set forth in SEQ ID NO:1 or a derivative or homologue thereof or capable of hybridising to SEQ ID NO:1 under low stringency conditions.
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4. The isolated nucleic acid molecule according to claim 3 which further encodes an amino acid sequence corresponding to an amino acid sequence set forth in SEQ ID NO:2 or a sequence having at least about 45% similarity to at least 10 contiguous amino acids in SEQ ID NO:2.
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5. The isolated nucleic acid molecule according to claim 2 substantially as set forth in SEQ ID NO:1.
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6. The isolated nucleic acid molecule according to claim 1 wherein said protein comprises the amino acid sequence substantially as set forth in SEQ ID NO:4 or a derivative, homologue or mimetic thereof or having at least about 45% similarity to at least 10 contiguous amino acids in SEQ ID NO:4.
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7. The isolated nucleic acid molecule according to claim 6 comprising a nucleotide sequence substantially as set forth in SEQ ID NO:3 or a derivative or homologue thereof or capable of hybridising to SEQ ID NO:3 under low stringency conditions.

8. The isolated nucleic acid molecule according to claim 7 which further encodes an amino acid sequence corresponding to an amino acid sequence set forth in SEQ ID NO:4 or a sequence having at least about 45% similarity to at least 10 contiguous amino acids in SEQ ID NO:4.
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9. The isolated nucleic acid molecule according to claim 6 substantially as set forth in SEQ ID NO:3.
10. The isolated nucleic acid molecule according to claim 1 wherein said protein comprises the amino acid sequence substantially as set forth in SEQ ID NO:6 or a derivative, homologue or mimetic thereof or having at least about 45% similarity to at least 10 contiguous amino acids in SEQ ID NO:6.
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11. The isolated nucleic acid molecule according to claim 10 comprising a nucleotide sequence substantially as set forth in SEQ ID NO:5 or a derivative or homologue thereof or capable of hybridising to SEQ ID NO:5 under low stringency conditions.
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12. The isolated nucleic acid molecule according to claim 11 which further encodes an amino acid sequence corresponding to an amino acid sequence set forth in SEQ ID NO:6 or a sequence having at least about 45% similarity to at least 10 contiguous amino acids in SEQ ID NO:6.
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13. The isolated nucleic acid molecule according to claim 10 substantially as set forth in SEQ ID NO:5.
14. The isolated nucleic acid molecule according to claim 1 wherein said protein comprises the amino acid sequence substantially as set forth in SEQ ID NO:8 or a derivative, homologue or mimetic thereof or having at least about 45% similarity to at least 10 contiguous amino acids in SEQ ID NO:8.
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15. The isolated nucleic acid molecule according to claim 14 comprising a nucleotide sequence substantially as set forth in SEQ ID NO:7 or a derivative or homologue thereof or capable of hybridising to SEQ ID NO:7 under low stringency conditions.

16. The isolated nucleic acid molecule according to claim 15 which further encodes an amino acid sequence corresponding to an amino acid sequence set forth in SEQ ID NO:8 or a sequence having at least about 45% similarity to at least 10 contiguous amino acids in SEQ ID NO:8.
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17. The isolated nucleic acid molecule according to claim 14 substantially as set forth in SEQ ID NO:7.
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18. The isolated nucleic acid molecule according to claim 1 comprising a nucleotide sequence substantially as set forth in SEQ ID NO:9 or a derivative or homologue thereof or capable of hybridising to SEQ ID NO:9 under low stringency conditions.
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19. The isolated nucleic acid molecule according to claim 18 which further encodes an amino acid sequence corresponding to an amino acid sequence set forth in SEQ ID NO:6 or a sequence having at least about 45% similarity to at least 10 contiguous amino acids in SEQ ID NO:6.
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20. The isolated nucleic acid molecule according to claim 18 substantially as set forth in SEQ ID NO:9.
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21. An isolated protein or a derivative, homologue, analogue, chemical equivalent or mimetic thereof wherein said protein is differentially expressed in liver tissue of obese animals compared to lean animals.
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22. The isolated protein according to claim 21 comprising an amino acid sequence substantially as set forth in SEQ ID NO:2 or a derivative, homologue or mimetic thereof or a sequence having at least about 45% similarity to at least 10 contiguous amino acids in SEQ ID NO:2 or a derivative, homologue, analogue, chemical equivalent or mimetic of said protein.
23. The isolated protein according to claim 22 encoded by a nucleotide sequence substantially as set forth in SEQ ID NO:1 or a derivative, homologue or analogue thereof or capable of hybridising to SEQ ID NO:1 under low stringency conditions

- or a derivative, homologue, analogue, chemical equivalent or mimetic of said protein.
24. The isolated protein according to claim 23 substantially as set forth in SEQ ID
5 NO:2.
25. The isolated protein according to claim 21 comprising an amino acid sequence
substantially as set forth in SEQ ID NO:4 or a derivative, homologue or mimetic
thereof or a sequence having at least about 45% similarity to at least 10 contiguous
10 amino acids in SEQ ID NO:4 or a derivative, homologue, analogue, chemical
equivalent or mimetic of said protein.
26. The isolated protein according to claim 25 encoded by a nucleotide sequence
substantially as set forth in SEQ ID NO:3 or a derivative, homologue or analogue
15 thereof or capable of hybridising to SEQ ID NO:3 under low stringency conditions
or a derivative, homologue, analogue, chemical equivalent or mimetic of said
protein.
27. The isolated protein according to claim 25 substantially as set forth in SEQ ID
20 NO:4.
28. The isolated protein according to claim 21 comprising an amino acid sequence
substantially as set forth in SEQ ID NO:6 or a derivative, homologue or mimetic
thereof or a sequence having at least about 45% similarity to at least 10 contiguous
25 amino acids in SEQ ID NO:6 or a derivative, homologue, analogue, chemical
equivalent or mimetic of said protein.
29. The isolated protein according to claim 28 encoded by a nucleotide sequence
substantially as set forth in SEQ ID NO:5 or a derivative, homologue or analogue
30 thereof or capable of hybridising to SEQ ID NO:5 under low stringency conditions
or a derivative, homologue, analogue, chemical equivalent or mimetic of said
protein.

30. The isolated protein according to claim 28 substantially as set forth in SEQ ID NO:6.
31. The isolated protein according to claim 21 comprising an amino acid sequence substantially as set forth in SEQ ID NO:8 or a derivative, homologue or mimetic thereof or a sequence having at least about 45% similarity to at least 10 contiguous amino acids in SEQ ID NO:8 or a derivative, homologue, analogue, chemical equivalent or mimetic of said protein.
- 10 32. The isolated protein according to claim 31 encoded by a nucleotide sequence substantially as set forth in SEQ ID NO:7 or a derivative, homologue or analogue thereof or capable of hybridising to SEQ ID NO:7 under low stringency conditions or a derivative, homologue, analogue, chemical equivalent or mimetic of said protein.
- 15 33. The isolated protein according to claim 31 substantially as set forth in SEQ ID NO:8.
34. The isolated protein according to claim 21 encoded by a nucleotide sequence substantially as set forth in SEQ ID NO:9 or a derivative, homologue or analogue thereof or capable of hybridising to SEQ ID NO:9 under low stringency conditions or a derivative, homologue, analogue, chemical equivalent or mimetic of said protein.
- 20 25 35. The isolated protein according to claim 21 wherein said protein is a homodimer.
36. The isolated protein according to claim 21 wherein said protein is a heterodimer.
37. A method of modulating expression of *B38*, *B55* and/or *B60* in a mammal, said method comprising contacting the *B38*, *B55* and/or *B60* gene with an effective amount of an agent for a time and under conditions sufficient to up-regulate, down-regulate or otherwise modulate expression of *B38*, *B55* and/or *B60*.

38. A method of modulating activity of *B38*, *B55* and/or *B60* in a subject, said method comprising administering to said subject a modulating effective amount of an agent for a time and under conditions sufficient to increase or decrease *B38*, *B55* and/or *B60* activity.

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39. A method of treating a mammal suffering from a condition characterised by one or more symptoms of obesity, anorexia, diabetes and/or energy imbalance said method comprising administering to said mammal an effective amount of an agent for a time and under conditions sufficient to modulate the expression of *B38*, *B55* and/or *B60* or sufficient to modulate the activity of *B38*, *B55* and/or *B60*.

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40. A method of treating a mammal suffering from a disease condition characterised by one or more symptoms of obesity, anorexia, diabetes or energy imbalance said method comprising administering to said mammal an effective amount of a protein according to claim 21.

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41. A pharmaceutical composition comprising *B38*, *B55* and/or *B60*, *B38*, *B55* and/or *B60* or an agent capable of modulating *B38*, *B55* and/or *B60* expression or *B38*, *B55* and/or *B60* activity together with one or more pharmaceutically acceptable carriers and/or diluents.

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42. An isolated antibody directed to the protein according to claim 21.

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43. An isolated antibody directed to the nucleic acid molecule according to claim 1.

44. The antibody according to claim 42 wherein said antibody is a monoclonal antibody.

45. The antibody according to claim 42 wherein said antibody is a polyclonal antibody.

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46. A method for detecting *B38*, *B55* and/or *B60* in a biological sample from a subject said method comprising contacting said biological sample with an antibody specific for *B38*, *B55* and/or *B60* or its derivatives or homologues for a time and under conditions sufficient for a complex to form and then detecting said complex.

47. A method for detecting *B38*, *B55* and/or *B60* mRNA in a biological sample from a subject said method comprising contacting said biological sample with an antibody specific for *B38*, *B55* and/or *B60* mRNA or its derivatives or homologues for a time and under conditions sufficient for a complex to form and then detecting said complex.
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48. A method of diagnosing and monitoring a mammalian disease condition, which disease condition is characterised by aberrant *B38*, *B55* and/or *B60* expression or functional activity, said method comprising screening for *B38*, *B55* and/or *B60* or *B38*, *B55*, and/or *B60* in a biological sample from said mammal.
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49. A method of diagnosing or monitoring a disease condition, which disease condition is characterised by one or more symptoms of obesity, anorexia, diabetes and/or energy imbalance said method comprising screening for *B38*, *B55* and/or *B60* or *B38*, *B55* and/or *B60* would reduce all homologues thereof in the biological sample from said mammal.
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50. An isolated nucleic acid molecule or derivative, homologue or analogue thereof comprising a nucleotide sequence encoding or complementary to a sequence encoding a protein or derivative, homologue or mimetic of said protein wherein said nucleic acid molecule is differentially expressed in liver tissue of fed animals compared to fasted animals.
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51. The isolated nucleic acid molecule according to claim 50 wherein said protein comprises the amino acid sequence substantially as set forth in SEQ ID NO:2 or a derivative, homologue or mimetic thereof or having at least about 45% similarity to at least 10 contiguous amino acids in SEQ ID NO:2.
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52. The isolated nucleic acid molecule according to claim 51 comprising a nucleotide sequence substantially as set forth in SEQ ID NO:1 or a derivative or homologue thereof or capable of hybridising to SEQ ID NO:1 under low stringency conditions.
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53. The isolated nucleic acid molecule according to claim 52 which further encodes an amino acid sequence corresponding to an amino acid sequence set forth in SEQ ID NO:2 or a sequence having at least about 45% similarity to at least 10 contiguous amino acids in SEQ ID NO:2.
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54. The isolated nucleic acid molecule according to claim 50 substantially as set forth in SEQ ID NO:1.
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55. The isolated nucleic acid molecule according to claim 50 wherein said protein comprises the amino acid sequence substantially as set forth in SEQ ID NO:4 or a derivative, homologue or mimetic thereof or having at least about 45% similarity to at least 10 contiguous amino acids in SEQ ID NO:4.
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56. The isolated nucleic acid molecule according to claim 55 comprising a nucleotide sequence substantially as set forth in SEQ ID NO:3 or a derivative or homologue thereof or capable of hybridising to SEQ ID NO:3 under low stringency conditions.
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57. The isolated nucleic acid molecule according to claim 56 which further encodes an amino acid sequence corresponding to an amino acid sequence set forth in SEQ ID NO:4 or a sequence having at least about 45% similarity to at least 10 contiguous amino acids in SEQ ID NO:4.
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58. The isolated nucleic acid molecule according to claim 55 substantially as set forth in SEQ ID NO:3.
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59. The isolated nucleic acid molecule according to claim 50 wherein said protein comprises the amino acid sequence substantially as set forth in SEQ ID NO:6 or a derivative, homologue or mimetic thereof or having at least about 45% similarity to at least 10 contiguous amino acids in SEQ ID NO:6.
60. The isolated nucleic acid molecule according to claim 59 comprising a nucleotide sequence substantially as set forth in SEQ ID NO:5 or a derivative or homologue thereof or capable of hybridising to SEQ ID NO:5 under low stringency conditions.

61. The isolated nucleic acid molecule according to claim 60 which further encodes an amino acid sequence corresponding to an amino acid sequence set forth in SEQ ID NO:6 or a sequence having at least about 45% similarity to at least 10 contiguous amino acids in SEQ ID NO:6.
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62. The isolated nucleic acid molecule according to claim 59 substantially as set forth in SEQ ID NO:5.
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63. The isolated nucleic acid molecule according to claim 50 wherein said protein comprises the amino acid sequence substantially as set forth in SEQ ID NO:8 or a derivative, homologue or mimetic thereof or having at least about 45% similarity to at least 10 contiguous amino acids in SEQ ID NO:8.
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64. The isolated nucleic acid molecule according to claim 63 comprising a nucleotide sequence substantially as set forth in SEQ ID NO:7 or a derivative or homologue thereof or capable of hybridising to SEQ ID NO:7 under low stringency conditions.
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65. The isolated nucleic acid molecule according to claim 64 which further encodes an amino acid sequence corresponding to an amino acid sequence set forth in SEQ ID NO:8 or a sequence having at least about 45% similarity to at least 10 contiguous amino acids in SEQ ID NO:8.
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66. The isolated nucleic acid molecule according to claim 63 substantially as set forth in SEQ ID NO:7.
67. The isolated nucleic acid molecule according to claim 50 comprising a nucleotide sequence substantially as set forth in SEQ ID NO:9 or a derivative or homologue thereof or capable of hybridising to SEQ ID NO:9 under low stringency conditions.
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68. The isolated nucleic acid molecule according to claim 67 which further encodes an amino acid sequence corresponding to an amino acid sequence set forth in SEQ ID NO:6 or a sequence having at least about 45% similarity to at least 10 contiguous amino acids in SEQ ID NO:6.

69. The isolated nucleic acid molecule according to claim 67 substantially as set forth in SEQ ID NO:9.
70. An isolated protein or a derivative, homologue, analogue, chemical equivalent or mimetic thereof wherein said protein is differentially expressed in liver tissue of fed animals compared to fasted animals.
71. The isolated protein according to claim 70 comprising an amino acid sequence substantially as set forth in SEQ ID NO:2 or a derivative, homologue or mimetic thereof or a sequence having at least about 45% similarity to at least 10 contiguous amino acids in SEQ ID NO:2 or a derivative, homologue, analogue, chemical equivalent or mimetic of said protein.
72. The isolated protein according to claim 71 encoded by a nucleotide sequence substantially as set forth in SEQ ID NO:1 or a derivative, homologue or analogue thereof or capable of hybridising to SEQ ID NO:1 under low stringency conditions or a derivative, homologue, analogue, chemical equivalent or mimetic of said protein.
73. The isolated protein according to claim 72 substantially as set forth in SEQ ID NO:2.
74. The isolated protein according to claim 70 comprising an amino acid sequence substantially as set forth in SEQ ID NO:4 or a derivative, homologue or mimetic thereof or a sequence having at least about 45% similarity to at least 10 contiguous amino acids in SEQ ID NO:4 or a derivative, homologue, analogue, chemical equivalent or mimetic of said protein.
75. The isolated protein according to claim 74 encoded by a nucleotide sequence substantially as set forth in SEQ ID NO:3 or a derivative, homologue or analogue thereof or capable of hybridising to SEQ ID NO:3 under low stringency conditions or a derivative, homologue, analogue, chemical equivalent or mimetic of said protein.

76. The isolated protein according to claim 74 substantially as set forth in SEQ ID NO:4.
77. The isolated protein according to claim 70 comprising an amino acid sequence substantially as set forth in SEQ ID NO:6 or a derivative, homologue or mimetic thereof or a sequence having at least about 45% similarity to at least 10 contiguous amino acids in SEQ ID NO:6 or a derivative, homologue, analogue, chemical equivalent or mimetic of said protein.
- 10 78. The isolated protein according to claim 77 encoded by a nucleotide sequence substantially as set forth in SEQ ID NO:5 or a derivative, homologue or analogue thereof or capable of hybridising to SEQ ID NO:5 under low stringency conditions or a derivative, homologue, analogue, chemical equivalent or mimetic of said protein.
- 15 79. The isolated protein according to claim 77 substantially as set forth in SEQ ID NO:6.
80. The isolated protein according to claim 70 comprising an amino acid sequence substantially as set forth in SEQ ID NO:8 or a derivative, homologue or mimetic thereof or a sequence having at least about 45% similarity to at least 10 contiguous amino acids in SEQ ID NO:8 or a derivative, homologue, analogue, chemical equivalent or mimetic of said protein.
- 25 81. The isolated protein according to claim 80 encoded by a nucleotide sequence substantially as set forth in SEQ ID NO:7 or a derivative, homologue or analogue thereof or capable of hybridising to SEQ ID NO:7 under low stringency conditions or a derivative, homologue, analogue, chemical equivalent or mimetic of said protein.
- 30 82. The isolated protein according to claim 80 substantially as set forth in SEQ ID NO:8.

- 5 83. The isolated protein according to claim 70 encoded by a nucleotide sequence substantially as set forth in SEQ ID NO:9 or a derivative, homologue or analogue thereof or capable of hybridising to SEQ ID NO:9 under low stringency conditions or a derivative, homologue, analogue, chemical equivalent or mimetic of said protein.

10 84. The isolated protein according to claim 70 wherein said protein is a homodimer.

15 85. The isolated protein according to claim 70 wherein said protein is a heterodimer.

20 86. A method of treating a mammal suffering from a disease condition characterised by one or more symptoms of obesity, anorexia, diabetes or energy imbalance said method comprising administering to said mammal an effective amount of a nucleotide sequence according to claim 1.

25 87. An isolated antibody directed to the protein according to claim 70.

30 88. The antibody according to claim 87 wherein said antibody is a monoclonal antibody.

35 89. The antibody according to claim 87 wherein said antibody is a polyclonal antibody.